

VOSKRESENSKIY, Sergey Sergeyevich; FADDEYEVA, I.I., red.; GEORGIYEVA,  
G.I., tekhn.red.

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VOSKRESENSKIY, S.S.; SAMOYLOVA, G.S.

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Vest.Mosk.un.Ser.5: Geog. 20 no.4:93-95 J1-Ag '65.

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H.G.; ANANIYEV, G.S.; PIMENOVA, R.Ye.; YEVTEYEVA, I.S.;  
KUZNETSOVA, L.T.; SOROKINA, Ye.P.; ZORIN, L.V.;  
SLADKOPEVTSEV, S.A.; ARISTARKHOVA, L.B.; MEDVEDEVA, N.K.;  
LOPATINA L.I., red.

[Geomorphological studies; work experience in southeastern  
Transbaikalia, eastern Fergana, central Kazakhstan, and  
the Caspian Lowland] Geomorfologicheskie issledovaniia;  
opyt rabot v Iugo-Vostochnom Zabaikal'e, Vostochnoi Fergane,  
TSentral'nom Kazakhstane i Prikaspiiskoi nizmennosti. Mo-  
skva, Izd-vo Mosk. univ., 1965. 275 p. (MIRA 18:7)

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(MIRA 18:5)

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TC177.V6

VOSKRESENSKIY, SERGEY VASIL'YEVICH

529N/5  
621.12  
.V9

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159 p. illus., map.

VOSKRESENSKIY, SERGEY VASIL'YEVICH.

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[In the Putorana Mountains] V gorakh Putorana. [Moskva] Izd-vo  
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On an irrational equation. Mat. v shkole no.4:89 J1-Ag '55.  
(Equations) (Numbers, Irrational) (MIRA 8:9)

c



KELDYSH, M.V., akademik; FEDOROV, Ye.k., akademik; ARTSIMOVICH, L.A., akademik;  
 SISAKYAN, A.P., akademik; GORSKIY, I.I.; PAPITSA, P.L.; FOK, V.A.;  
 LANDAU, L.D.; LIFSHTITS, Ye.M.; SEMENOV, A.I.; MELIKOV, I.M.;  
 ALEKSEYEVSKIY, N.Ye.; VAYNSHTEYN, L.A.; PALLADIN, A.V., akademik;  
 SATPAYEV, A.I., akademik; AMBARTSUMYAN, V.A., akademik; LUPREVIKH,  
 V.F.; KUSHNIRSHVILI, N.I., akademik; PARAKHEYEV, E.K.; MUSTEL', E.R.;  
 MASEVICH, A.G., doktor fiz.-matem.nauk; EFRON, B.M.; MARTYNOV, D.Ya.,  
 prof.; GABOR'YEV, A.A., akademik; MAROV, K.K., prof.; COLOVNOVA,  
 A.G., prof.; FILATOVA, L.G., prof.; FEYVE, Ya.V.; SEMIKHATOV, B.N.,  
 prof.; TIL'OV, A.G.; RYCHAGOV, G.I.; BARSKAYA, V.F.; VLASOVA, A.A.;  
 BARANOVA, Ye.P.; KIBARDINA, L.A.; ISACHENKO, A.F.; IL'INA, Yu.P.;  
 DANILOV, A.I., prof.; FLAUDE, K.K.; NECHAYEVA, T.N., prof.; CHEFEL,  
 L., doktor; SZANTO, Ladislav, akademik; BELACHIK, Yozef; FAN KLOK  
 V'YEN; EIGENSON, M.S., prof. (L'vov); STARKOV, N.; AERAMOVICH, Yu.;  
 VOSKRESHNSKIY, V.; KROPACHEV, A.; REZVOY, D., prof., (L'vov);  
 KONDRAT'YEV, V.H., akademik; LEBEDINSKIY, V.I., kand.geol.-mineral.-  
 nauk; YANSHIN, A.L., akademik

"Priroda" is 50 years old. Priroda 51 no.1:3-16 Ja '62.  
 (MIRA 15:1)

1. Prezident AN SSSR (for Keldysh). 2. Glavnyy uchenyy sekretar'  
 Prezidiuma AN SSSR (for Fedorov). 3. Akademik-sekretar' Otdeleniya  
 fiziko-matem.nauk AN SSSR (for Artsimovich). 4. Akademik-sekretar'  
 Otdeleniya biologicheskikh nauk AN SSSR (for Sisakyan). 5. Chlen-  
 korrespondent AN SSSR, zamestitel' akademika-sekretarya Otdeleniya  
 (Continued on next card)

VOSKRESENSKIY, V.

Personnel for heroic Cuba. Prof.-tekh. obr. 20 no.12:21-22  
D '63. (MIRA 17:1)

VOSKRESENSKIY, V.; SLAVGORODSKIY, V.

Requirements of road signs. Avt.dor. 26 no.9:4-5 S '63.  
(MIRA 16:10)

VOSKRESENSKIY, V. A.

FAYZULLIN, F. F.; VOSKRESENSKIY, V. A.; GODNEVA, M. M.

New electrolyte for electrolytic polishing of AMTS aluminum alloys. Uch. zap. Kaz. un. 113 no.8:41-49 '53. (MLRA 10:5)

1. Kafedra fizicheskoy khimii.  
(Polishing, Electrolytic) (Aluminum alloys) (Electrolytes)

VOSKRESENSKIY, V.A.; FAYZULLIN, F.F.

Drop method for determining the thickness of a galvanized coating.  
Uch. zap. Kaz. un. 117 no.9:198-200 '57. (MIRA 13:1)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina.  
Kafedra fizicheskoy khimii.  
(Galvanizing)

"APPROVED FOR RELEASE: 03/14/2001

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VOSKRESENSKIY, V. A.

AUTHORS: Voskresenskiy, V.A., Sazanov, A.A.

32-8-25/61

TITLE: An Accelerated Method for the Determination of Wood Dampness  
(Uskorennyy metod opredeleniya vlazhnosti drevesiny)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 8, pp. 947-948 (USSR)

ABSTRACT: The here suggested method is based upon the property of wood easily to soak up certain organic liquids. On that occasion the spot which develops on the wood after the drop fell on it is the larger the moister the wood is. 98 % acetic acid, alcohol rectificate and acetone, which are soluble in water in any amounts, may be used as liquids in this case.

The course of the experiment: Boards of spruce and fir (250-250-20) were taken as samples. 20 drops of colored reagent were placed on the freshly planed surface by means of a dropping device. The drops formed spots of unequal ellipsoidal forms. The diameter of a spot was calculated according to the formula

$d = \frac{a+b}{2}$ , where a and b signify the largest and the smallest diameter. For 20 drops applies  $d_{cp} = \frac{(d_1 + d_2 \cdot d_{20})}{20}$ . Parallel to it,

on the same sample, the standard test was performed according to Din & Stark with a xylol extraction. Based on the obtained

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**An Accelerated Method for the Determination of Wood Dampness**

results a graphical scheme was drawn. As may be seen from the scheme, the curve obtained from the application of 98 % acetic acid lies nearest to the normal linear curve. According to this method the experiment takes about 10 minutes. The determinations may also be carried out in the workshops themselves with an accuracy around 2-3 % within the framework of from 6 to 46 % moisture.

**ASSOCIATION:** Institute for Construction Engineers in the Mineral Oil Industry in Kazan. (Kazanskiy institut inzhenerov-stroiteley neftyannoy promyshlennosti)

**AVAILABLE:** Library of Congress

Card 2/2



SOV/137-59-2-4529

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 2, p 314 (USSR)

AUTHORS: Voskresenskiy, V. A., Fayzullin, F. F.

TITLE: On the Droplet Method for the Determination of the Thickness of an Electrolytic Coating Layer (O kapel'nom metode opredeleniya tolshchiny sloya gal'vanicheskikh pokrytiy)

PERIODICAL: Uch. zap. Kazansk. un-ta, 1957, Vol 117, Nr 9, pp 198-200

ABSTRACT: Results are adduced on experimental work on the comparison of readings by the droplet and the gravimetric methods for the determination of the thickness of electrolytic coatings. Specimens in the form of either St-20 steel or Cu M-1 plates or rods were coated with various metals under shop conditions using ordinary standard electrolytes. At first the thickness was determined by the gravimetric method; then, on the same specimens, it was determined by the droplet method according to the empirical formula:  $\sigma_{ave} = (N-1)K$ , where  $\sigma_{ave}$  is the average local thickness, in  $\mu$ , of the metal layer, N is the number of drops of the reagent that was used in the determination, K is the thickness of the coating in  $\mu$  which is removed by one drop of reagent at the given temperature. In all cases the thickness of the

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SOV/137-59-2-4529

On the Droplet Method for the Determination of the Thickness of an (cont.)

coating as determined by the droplet method was lower than that determined gravimetrically. The author proposes slightly changed empirical formulae for the determination of the thickness of Ni, Zn, Ag, Cu, Sn, Cd and brass coatings by the droplet method while retaining the universally accepted values for K. 30% HNO<sub>3</sub> is proposed as a reagent for determining the thickness of a layer of brass. The values for K at different temperatures for this type of coating have been established experimentally.

Ya. L.

Card 2/2

VOSKRESENSKIY, V.A. , kand.tekhn.nauk

Using the BF-4 paste for preventing corrosion of metals and concretes.  
Nauch.dokl.vys.shkoly; stroi. no.1:172-174 ' 58. (MIRA 12:1)

1. Rekomendovana kafedroy stroitel'nykh materialov i khimii Kazanskogo  
inzhenerno-stroitel'nogo instituta.  
(Corrosion and anticorrosives)

5(1,3)

AUTHORS:

Voskresenskiy, V. A., Shamsutdinov, I. S. SOV/153-58-4-19/22

TITLE:

The Problem of the Mechanical Orientation of Plasticized Polyvinyl Chloride Films ( K voprosu o mekhanicheskoy oriyentatsii plenok plastifitsirovannogo polikhlorvinila)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 4, pp 117 - 121 (USSR)

ABSTRACT:

The mechanical orientation (extraction) of plastic compositions has been little investigated from the quantitative point of view (Ref 1), although this phenomenon is of great interest in practice. Dibutyl phthalate and chlorinated dibutyl phthalate were introduced as plastifiers on rolls at 135 - 140°. The composition of the obtained compounds is given in table 1. Calcium stearate acted as stabilizer. Plasticized materials sheets (2,5-2,6 mm thick) were pressed of several foils of a thickness of 0,2 mm in polished and chromed molds at 145 - 150°. These sheets were mechanically extended by a device (Fig 1). The utmost extension must not be more than 60%. The state obtained by this

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The Problem of the Mechanical Orientation of  
Plasticized Polyvinil Chloride Films

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orientation was fixed by cooling with water at  $30-35^{\circ}$ . A special constructed pendulum device served for the testing of the resistance to frost (Fig 3). Table 3 shows the influence exerted by the orientation on the physico-mechanical properties and on the resistance to frost of the films. The increase of the value of the breaking load and expansion as well as the increased resistance to frost of the plasticized products due to orientation cannot be explained by the straightening, of the chains, their parallelization and approach alone, but probably is due to a great extent to the fact that the plastifier in the orientation is more equally distributed between the chains of the plastifier. In the extreme case the monomolecular layer is reached. For this reason weaker sections which had been formed by an unequal accumulation of the plastifier disappear. In this way the flexibility, elasticity, strength and resistance to frost of the foils are improved. Thus, an additional mechanical plastification without the introduction of a plastifier is caused. The purity and the

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• The Problem of the Mechanical Orientation of  
Plasticized Polyvinyl Chloride Films

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surface luster of the metallic forms is decisive. Foils  
with 30 and 34 parts by weight of plastifier per 100 parts  
of the polymer can be considerably improved with respect  
to their mentioned mechanical and physical properties by  
orientation. There are 3 figures, 3 tables, and 2  
Soviet references.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut (Kazan' Civil  
Engineering Institute) Kafedra stroitel'nykh materialov  
i khimii (Chair of Building Materials and Chemistry)

SUBMITTED: January 28, 1958

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5(1,2)

SOV/153-58-6-15/22

AUTHORS:

Voskresenskiy, V. A., Shamsutdinov, I. S.

TITLE:

On Certain Rules Governing Benzine Action on Plastified Polychlorovinyl (O nekotorykh zakonomernostyakh deystviya benzina na plastifitsirovanny polikhlorvinil)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 6, pp 87-92 (USSR)

ABSTRACT:

Many polymers and plastified compositions on this basis possess the technologically valuable property of resisting, to a fairly high degree, swelling in low-molecular liquids. This property is made use of in the sealing of flanged joints, in the corrosion protection of chemical apparatus, etc. Neither the mechanisms of action concerned, nor the rules governing said process have been sufficiently explored. The authors judged the resistance to said liquids of the films from the weight changes occurring in samples maintained in benzine B-70. Weight was checked after 1, 2, 3, 5, 10, 15, 20, 25 and 30 days. Plastified polychlorovinyl combinations (resin PB-1) were hot-rolled at 135-140°. The plastifiers employed were dibutyl-phthalate (DBPh), tri-cresyl-phosphate (TCPh), tri-butyl-phosphate, and sovol in quantities varying

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SOV/153-58-6-15/22

## On Certain Rules Governing Benzene Action on Plastified Polychlorovinyl

over a wide range. The modern views on the diffusion of the low-molecular liquids (Refs 1-11) are recalled (Fig 1). In the experimental part, figures 2 and 3 show the benzene resistance of the films with DBPh and TCPH, respectively. In samples with high plastifier contents, a significant plastifier extraction from the film occurs. It takes place the more rapidly and to a larger extent the higher the plastifier content in the composition is. There is a weight decrease in such samples (Curves 1, 2 in figure 2, and 1 in figure 3). The benzene resistance of films with identical contents by weight and equimolar contents of various plastifiers varies and obviously depends, in respect of any one polymer, of the chemical nature and structures of the plastifiers employed. Figure 4 illustrates the change in the benzene resistance of the films within 24 hours, according to the quantitative plastifier content and the chemical nature of the plastifiers. The shapes of the curves concerned were about the same for the first 3 plastifiers, but differed widely from that for sovol (Fig 4, Curve 4). Sovol effected a high benzene resistance of the films. Only swelling occurred, but there was no dissolution. Table 1 shows the benzene resistance of the films

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SOV/153-58-6-15/22

On Certain Rules Governing Benzine Action on Plastified Polychlorovinyl

after 24 hours with identical plastifier contents. The technological value of individual combinations is discussed. The changes in the physico-mechanical indices of the films brought about by swelling and dissolution in benzine are shown by table 2. There are 4 figures, 2 tables, and 13 references, 12 of which are Soviet.

ASSOCIATION: Kafedra stroitel'nykh materialov i khimii; Kazanskiy inzhenerno-stroitel'nyy institut  
(Chair of Building Materials and Chemistry; Kazan' Institute of Civil Engineering)

SUBMITTED: February 17, 1958

Card 3/3

VOSKRESENSKIY, Y.A.

Chlorinated tricresylphosphate as a plasticizer for polychlorovinyl  
tars. Khim. nauka i prom. 3 no.2:285 '58. (MIRA 11:6)  
(Vinyl polymers) (Plasticizers)

VOSKRESENSKIY, V.A.

~~Aging of various plasticized compositions of polyvinyl chloride.~~  
Zhur. prikl. khim. 31 no.7:1118-1121 J1 '58. (MIRA 11:9)

1. Kafedra stroitel'nykh materialov i khimii Kazanskogo inatituta inzhenerov-stroitelov neftyanoy promyshlennosti.  
(Ethylene)

15.8220

27219

S/081/61/000/014/027/030  
B105/B202

AUTHORS: Kozlov L. M., Voskresenskiy V. A., Burmistrov V. I.

TITLE: Problem of polymer plastification by means of some  
nitrocompounds of the aliphatic and alicyclic series

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 616,  
abstract 1411 33 (Tr. Kazansk. khim.-tekhnol. in-ta,  
1959, vyp. 26, 42 - 47)

TEXT: The investigation of the plasticizing effect of the nitrocompounds  
of the aliphatic and alicyclic series on polyvinyl chloride showed that  
only substances with ring structure, especially with 6-membered ring,  
proved efficient. Compounds with open chains either do not combine at all  
or produce only weak effects. The authors obtained better results with  
1-nitromethyl-1-cyclohexanol (I) and with acetyl-1-nitromethyl-1-cyclo-  
hexanol (II). The study of the physicochemical properties of the foils  
which were produced by means of I and II showed a temporary tearing  
strength of 101.5 and 105.5 kg/cm<sup>2</sup>, a relative elongation of 168.0 and

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S/081/61/000/014/027/030  
B105/B202

Problem of polymer plastification ...

175.0 %, a hardness of 9.0 and 8.5 kg/cm<sup>2</sup>, determined by T<sub>100M</sub>-2-m (TShM-2-m) (Johns). Foils that had been plasticized by means of I and II are more stable than foils with dibutyl phthalate benzene; their water resistance is, however, lower. Test samples were produced by carefully stirring polyvinyl chloride of the type ПБ-1 (PB-1) and a plasticizer in a weight ratio of 1 : 1. Subsequently the mixture was subjected to aging at 30 - 40° C during one day. The mass was then heated up to 1000 - 1550° C (as depending on the type of the plasticizer) and pressed in metal molds at 150 - 1550° C at a pressure of 40 - 50 kg/cm<sup>2</sup>. 2.2 - 2.3-mm thick foils were obtained. [Abstracter's note: Complete trans-  
lation.]

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5.3830

77525  
SOV/80-33-1-34/49

AUTHORS: Voskresenskiy, V. A., Kozlov, L. M.  
TITLE: Concerning Plasticization of Polymers  
PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp  
191-195 (USSR)  
ABSTRACT: The effect of the chemical composition and structure of plasticizers on the plasticization of poly (vinyl chloride) was studied by determining some of the mechanical and chemical constants and aging resistance of the plasticized poly (vinyl chloride). A short review of previous work in this field is given. The authors propose a new method for calculating the composition of the plasticizing mixture by taking into account the length of molecular chains of polymer and plasticizer. For example: it was found (from the actual distance between the atoms in the polymer chain and in the plasticizer molecule), that two molecules of tributyl phosphate (TBP) block

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# Concerning Plasticization of Polymers

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a portion of polymer chain of 9 links; one molecule of TBF blocks a portion of polymer chain of average molecular weight of 281.25; thus, an elementary calculation led to the following ratio between the polymer and plasticizer, 100:98.8 parts by weight, respectively.

Calculated elemental of the components

a = conditional No. of components  
b = ratio of the components by the weight  
c = resin PB-1  
d = plasticizers  
e = dibutyl phosphate (DBP)  
f = tricresyl phosphate (TKF)  
g = Sovol  
h = TBF  
i = dibutyl sebacate (DBS)  
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a	b					
	c	d				
		e	f	g	h	i
1	100	98.8	—	—	—	—
2	100	—	107.05	—	—	—
3	100	—	—	175.2	—	—
4	100	—	—	—	77.5	—
5	100	—	—	—	—	50.5

Concerning Plasticization of Polymers

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Some of the results of experiments are shown in Table 2.

Table 2.  
Hardness of films made from poly (vinyl chloride)  
and equimolar parts of different plasticizers

a = conditional Nr of the  
composition  
b = plasticizer  
c = ratio of polymer,  
plasticizer and  
stabilizer  
d = hardness of films  
(kg/cm<sup>2</sup>)

a	b	c	d
1	ДБФ	100:98.8:1.5	5.0
2	ТКФ	100:107.05:1.5	7.5
3	Совол	100:175.2:1.5	29.0
4	ТБФ	100:77.5:1.5	11.0
5	ДБС	100:50.5:1.5	19.25

The hardnesses of films composed of 80 parts by  
weight of different plasticizers and 100 parts of  
polymer are:

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Concerning Plasticization of Polymers

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Composition Nr	1	2	3	4	5
Hardness (kg/cm <sup>2</sup> )	7.04	9.0	41.5	10.4	29.55

Equal volumes of different plasticizers affect the hardness of films similarly (as shown above). To show the dependence of plasticization on the chemical composition and structure of plasticizers, the compounds shown in Table 3 were tested as plasticizers.

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Table 3. Plasticizers of nitrocompound type and their derivatives of aliphatic and cyclic structure

a = formula  
b = b.p. (°C)  
and residual  
pressure  
(in mm Hg)  
respectively

(a)		(b)	(a)	(b)	
№ 1		119-121, 12	№ 7		98.5-99.5, 13
№ 2		128-131.5, 10	№ 8		121-123, 13
№ 3		77-78, 10	№ 9		88.0, 20
№ 4		128-131.5, 10	№ 10		91, 10 мм
№ 5		85-88, 11.5	№ 11		98-98.5, 3 мм
№ 6		109-111, 4	№ 12		140, 10 мм

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Concerning Plasticization of Polymers

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According to their degree of compatibility with poly (vinyl chloride), the above compounds form the following series: Nr 12, Nr 2, Nr 1, Nr 6, Nr 11, Nr. 8. Nr 12 has the highest and Nr 8 the lowest compatibility. It was found that only cyclic compounds with six membered rings are compatible with poly (vinyl chloride) and form films with desirable physical and chemical characteristics (see Table 4).

Table 4. Physical and chemical characteristics of plasticizers 12, 2, 1

a = plasticizer Nr  
b = ratio of polv.  
(vinyl chloride),  
plasticizer and  
stabilizer

(a)	(b)	(c)	(d)
12	100:100:1.5	166.8	203.0
2	100:100:1.5	105.55	175.0
1	100:100:1.5	101.50	168.04

c = tensile strength  
(kg/cm<sup>2</sup>)

d = elongation

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Concerning Plasticization of Polymers

77525  
SOV/80-33-1-34/49

There are 4 tables; and 15 references, 3 U.S., 1 French, 11 Soviet. The U.S. references are: Stay Kney, J. Polymer Sci., 2, 237 (1948); Doolittle, J. Polymer Sci., 2, 124 (1947); Cash, Mod. Plastics, 21, 119 (1944).

SUBMITTED: April 13, 1959

Card 7/7

SHAMSUTDINOV, I.S.; VOSKRESENSKIY, V.A.

Aging and shrinkage of the K-21-22 molding powder in ready  
articles. Plast.massy no.12:57-58 '61. (MIRA 14:12)  
(Thermoplastics—Molding)

S/153/61/004/006/006/008  
E134/E453

AUTHORS: Voskresenskiy, V.A., Byl'yev, V.A.  
TITLE: A study of the plasticization of polyvinyl chloride  
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,  
Khimiya i khimicheskaya tekhnologiya, v.4, no.6, 1961,  
1016-1021

TEXT: This paper describes the effects of the chemical nature of the plasticizers (polarity, molecular size and shape, structural group, etc) on the plasticization of PVC. Much of the work is based on previous work by the same authors. Tensile strength and % elongation figures are presented for PVC plasticized with nitromethyl-cyclohexanol, nitromethyl-chlorocyclohexanol and acetyl-nitromethyl-cyclohexane. The results show that the plasticizing effect of the compounds increases with increased compatibility with the polymer and that this in turn is related to the chemical type and structure of the plasticizers and the presence of various functional groups. The effect of various plasticizers of similar chemical structure, but with different functional groups, was studied. Phthalates with Cl and NO<sub>2</sub>

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S/153/61/004/006/006/008  
E134/E453

A study of the plasticization ...

substitution in the benzene ring, and phosphates with Cl in the ring were investigated. A table of properties of dibutyl phthalate and tricresyl phosphate with the above variations is provided; properties include tensile strength, % elongation, hardness and a specially designed low temperature resistance test. A table showing the effect of benzene immersion is given as well as some swelling curves. The introduction of these functional groups changes the physical properties and swelling characteristics considerably. Another investigation deals with the effect of the chain-length of the non-polar portion of the molecule on plasticizing efficiency. A table of tensile strength and hardness is provided for PVC plasticized with methyl, ethyl, propyl and butyl phthalate. Increasing chain length improves the plasticizing effect. The plasticizing effect of diphenyl, naphthalene and anthracene was studied by measurement of hardness, tensile strength and % elongation. As compatibility decreases from diphenyl to anthracene, the plasticizing effect is also reduced; this was considered to be an effect of chemical structure, size and molecular shape. A quantitative investigation of the

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S/153/61/004/006/006/008

E134/E453

A study of the plasticization ...

effect of air storage for 12 months was carried out on PVC plasticized with dibutyl phthalate, dibutyl nitrophthalate and dibutyl chlorophthalate respectively. The results of measurements of tensile strength, % elongation and hardness showed that ageing takes place much more slowly when the two substituted butyl phthalates are used as plasticizers. This was considered to be partly the effect of chemical structure and greater compatibility. For the same reason the substituted phthalates are held more strongly by the polymer and not extracted as easily by solvents. Benzene swelling curves for PVC plasticized with dibutyl phthalate and dibutyl chlorophthalate are given before and after ageing. There are 3 figures and 8 tables.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut  
Kafedra khimii (Kazan' Institute of Construction  
Engineering, Department of Chemistry)

SUBMITTED: July 6, 1960

Card 3/3



S/080/61/034/001/018/020  
A057/A129

15.8500 2209.2409

AUTHORS: Voskresenskiy, V.A., Byl'yev, V.A., Orlova, Ye.M.

TITLE: On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

PERIODICAL: Zhurnal Prikladnoy Khimii, 1961, Vol. 34, No. 1, pp. 225-227

TEXT: The effect of the non-polar solid substances in diphenyl, naphthalin, and anthracene on plastification of polyvinyl chloride [ПБ-1 (PB-1) type and ПФ-4 (PF-4)] and dependence of the plastification effect on the chain length of the non-polar part of some polar plasticizers (dimethyl-, diethyl-, dipropyl-, and dibutyl-phthalate) were investigated. The plasticizer was added to the polymer on rolls at 135-140°C and from the obtained film 2.5-3.0 mm thick sheets were formed by hot pressing. Compositions of the mixtures with non-polar plasticizers are given in Tab.1 and properties of the obtained mixtures in Tab.2. The results demonstrate that compatibility and plastification effect decrease from diphenyl to naphthalin and then to anthracene. This difference in plastification properties is due to the influence of size and  
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22533  
S/080/61/034/001/018/020  
A057/A129

On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

form of the molecule of the plasticizer. Diphenyl has the best compatibility because of the elongated shape of its molecule, while naphthalin and especially anthracene molecules are much bigger. A new effect was observed with diphenyl-containing mixtures, viz., irreversible strengthening at room temperature with cold stretching of the sample resulting in unexpectedly high toughness (141.1 kg/cm<sup>2</sup> instead of 80-85 kg/cm<sup>2</sup> corresponding to the level of hardness). The increase in hardness with elongation is demonstrated in Tab. 3. The observed effect of strengthening is apparently caused not only by the orientation of molecules and better distribution of the plasticizer in the polymer phase, but also by increasing of the crystal phase in the system polyvinyl chloride - diphenyl during cold stretching. Heating of the strengthened samples to 100-120°C caused momentarily collapse of the orientation effect and the material obtained rubberlike elasticity. Effect of the chain length of the non-polar part of polar plasticizers on plastification was studied on the following 3 compositions: no.1 - (in weight parts) 100 PF-4 resin, 64 plasticizer, 3 calcium stearate (stabilizer); no.2 - 100 PF-4 resin, 3 calcium stearate (stabilizer); no.3 - 100 PF-4 resin, 64 plasticizer, 3 calcium stearate (stabilizer).

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S/080/61/034/001/018/020  
A057/A129

On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

um stearate, 20 (equimolecular parts) plasticizer; no.3 - 100 PF-4 resin, 3 calcium stearate, 10 (equimolecular parts) plasticizer. Plastification effect was estimated by the tensile strength  $\delta$  (in  $\text{kg/cm}^2$ ) and hardness  $H_B$  (in  $\text{kg/cm}^2$ ). The obtained results (Tab.4) demonstrate that increase in the non-polar part of the polar plasticizer caused increase in plastification effect. There are 4 tables.

SUBMITTED: March 19, 1960

X

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15.8530 also 2209.2409

27068  
S/080/61/034/003/008/017  
A057/A129

11.2210

AUTHORS: Voskresenskiy, V. A., Byl'yev, V. A., Orlova, Ye. M.

TITLE: Effect of high-frequency currents on the plastification of polyvinyl-chloride compositions.

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 3, 1961, 593 - 597

TEXT: The effect of a high-frequency (19.5 megacycles) current field on some plasticized polyvinylchloride compositions was investigated. A considerable improvement of physico-chemical and mechanical properties of the polyvinylchloride film was attained after a 2-minute high-frequency heating of the mix. Also solubility of the film in low-molecular liquids decreased. Considerations on the mechanism of processes occurring in plasticized polyvinylchloride mixtures during high-frequency heating were presented. High-frequency heating of thermoreactive press-powders before formation of press-articles is nowadays widely used. Several literature data are given, e. g., by M. I. Garbar and A. D. Sokolov [Ref. 1: Khim. prom., 2, 38 (1948)], B. M. Notkin and I. Sh. Ptk [Ref. 2: Khim. prom. 7, 198 (1952)], H. E. Murray [Ref. 4: Modern Plastics, 34, 137 (1957)] etc., and improvements were effected in processing of plastics by means of high-frequency heating.

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A057/A129

Effect of high-frequency currents on the...

Nevertheless simultaneously occurring processes of destruction and cross linking effected by this treatment were not investigated principally. In the present work one of the most important plastics - polyvinylchloride (PVC) - was investigated in relation to this problem. Plasticized compositions were prepared of PVC of the ПБ-1 (PB-1) type with dibutylphthalate, dibutylsebacinate, dimethylphthalate and 1-nitromethyl-2-chlorocyclohexanol-1. The following technological procedure was carried out: The polymer, plasticizer and the stabilizer were mixed and left 24 hrs for ripening at room temperature. Then a 1 - 2 cm thick layer of the mass was applied on an aluminum plate and the high-frequency treatment was carried out by means of a ГГ-107 (GG-107) generator. The distance between the surface of the mass and the mobile anode was 5 - 7 mm, anodic current 0.34 - 0.40 amp, net current 200 - 250 amp, and a 19.5 megacycle frequency was applied. Then the mass was rolled to a 0.25 - 0.30 mm thick film with a front roll at  $135 \pm 2^{\circ}\text{C}$  and a back roll at  $120 \pm 2^{\circ}\text{C}$ , having a friction ratio of 1 : 1.25. The properties of these films were then investigated. The necessary minimum of high-frequency treatment was determined with a composition containing: 100 weight parts of PVC, 64 dibutylphthalate and 1.5 calcium stearate using a treatment of 1, 2, 3, 4, 5, 6, 7 or 8 minutes. Optimum improvement of the tensile strength  $\sigma$  and relative elongation  $\Delta l$

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S/080/61/034/003/008/017

A057/A129

Effect of high-frequency currents on the...

of the FVC films was effected by the 2-minute high-frequency heating. In this case the temperature of the mass increases just to 60 - 65°C by the treatment, while a 5-minute treatment effects an increase in the temperature to 165°C. The high-frequency effect was tested also on other compositions (Table 1) and the obtained results are presented in Table 2. The improvement of the physical and mechanical properties of all investigated compositions by the 2-minute treatment is obvious, but the degree of the effect depends on the amount and type of plasticizer. Corresponding tests demonstrated also that the high-frequency treatment increases considerably the resistance of the plastic films against benzene, water, 1 N H<sub>2</sub>SO<sub>4</sub> and 1 N NaOH solutions. The present authors assume that the observed improvement is effected by deformation of polar groups in the polymer chain and the molecule of the plasticizer (increasing polarization) resulting in a more intensive interaction between polymer and plasticizer. Thus the latter is better distributed between the chains of the polymer and so less extractable by low-molecular solvents. A 3 - 5 minute high-frequency heating effects, on the other hand, a rise in temperature resulting in already considerable destruction and cross-linking processes (the latter prevail). Thus in 5-minute treatments cross-linking processes effect a decrease in elasticity, solubility and softening temperature of the plasticized material. There are 5 figures, 2 tables and 16 references; 8 Soviet-bloc and 8



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S/080/61/034/003/008/017

A057/A129

Effect of high-frequency currents on the...

non-Soviet-bloc. The references to the four most recent English-language publications read as follows: H. E. Murray, Modern Plastics, 34, 137 (1957); Plastics Catalog, 455 (1944); Modern Plastics, 10, 116 (1945); A. Blake, Plastics, 210, 20 (1955).

Table 1. Composition of the mixtures

Composition of the mix	weight ratio of the components						
	no. 1	no. 2	no. 3	no. 4	no. 5	no. 6	no. 7
polyvinylchloride (resin PB-1) . . . . .	100	100	100	100	100	100	100
dibutylphthalate . . . . .	48	64	-	-	-	-	-
dibutylsebacate . . . . .	-	-	48	64	-	-	-
dimethylphthalate . . . . .	-	-	-	-	74	64	-
1-nitromethyl-2-chlorocyclohexanol-1 . .	-	-	-	-	-	-	100
calcium stearate . . . . .	1.5	1.5	1.5	1.5	1.5	1.5	1.5

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VOSKRESENSKIY, V. A.

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PHASE I BOOK EXPLOITATION

SOV/6034

Konferentsiya po khimii i primeneniyu fosfororganicheskikh soyedineniy. 2d, Kazan', 1959.

Khimiya i primeneniye fosfororganicheskikh soyedineniy; trudy (Chemistry and Use of Organophosphorus Compounds; Conference Transactions) Moscow, Izd-vo AN SSSR, 1962. 630 p. Errata slip inserted. 2800 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskly filial.

Resp. Ed.: A. Ye. Arbuzov, Academician; Ed. of Publishing House: L. S. Povarov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This collection of conference transactions is intended for chemists, process engineers, physiologists, pharmacists, physicians, veterinarians, and agricultural scientists.

COVERAGE: The transactions include the full texts of most of the scientific papers presented at the Second Conference on the Chemistry and Use of

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SOV/6034

Chemistry and the Use of Organophosphorus (Cont.)

Organophosphorus Compounds held at Kazan' from 2 Nov through 1 Dec 1959. .  
The material is divided into three sections: Chemistry, containing 67 articles; Physiological Activity of Organophosphorus Compounds, containing 26 articles; and Plant Protection, containing 12 articles. The reports reflect the strong interest of Soviet scientists in the chemistry and application of organophosphorus compounds. References accompany individual reports. Short summaries of some of the listed reports have been made and are given below.

TABLE OF CONTENTS:[Abridged]:

Introduction (Academician A. Ye. Arbuzov)

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TRANSACTIONS OF THE CHEMISTRY SECTION

Geffer, Ye. L. [NII plastmass (Scientific Research Institute of Plastics, Moscow)]. Some Prospects for the Industrial Use of Organophosphorus Compounds

46

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Chemistry and the Use of Organophosphorus (Cont.)

SOV/6034

detergents, anticorrosion agents, antiwear additives, as well as serve as demulsifiers, antioxidants, and depressants. Methods for preparing industrial additives by synthesis are pointed out and described.

Sanin, P. I., Ye. S. Shepeleva, and B. V. Kleymenov [Institute of Petrochemical Synthesis]. Organophosphorus Compounds With  $\text{CCl}_3$  as Additives to Lubricants

389

A synthesis of compounds containing the  $\text{CCl}_3$  group has been made and their effect as wear-reducing additives under friction conditions at high loads studied. It has been shown that the effect of this type of compound depends largely on the presence of the  $\text{CCl}_3$  group in the molecule and that the chloride film on the friction surface of the metal develops due to the effect of the chlorine atoms in the  $\text{CCl}_3$  group.

Voskresenskiy, V. A. [Kazanskiy inzhenerno-stroitel'nyy institut (Kazan' Construction Engineering Institute)]. Trichlorotricresyl

Card 18/14

3/4

Chemistry and the Use of Organophosphorus (Cont.)

SOV/6034

Phosphate as a Plasticizer for Polychlorovinyl

395

It has been determined that trichlorotricresylphosphate can be obtained by direct chlorination of tricresylphosphate, that it is more compatible with polychlorovinyl than tricresylphosphate, and that in combination with polychlorovinyl it forms strong, elastic, and non-flammable compositions with satisfactory frost-resisting properties and sufficient stability with respect to low molecular fluids. It has also been determined that polychlorovinyltrichlorotricresylphosphate systems at temperatures of 160 to 170°C and under pressure gradually change to an infusible and insoluble state and the slurry turns black. This is ascribed to the cross-linking processes taking place in the material primarily due to catalytic action of the plasticizer. Trichlorotricresylphosphate is recommended as an effective nonflammable plasticizer for polychlorovinyl. It is further recommended for mass production.

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Card 13 ~~14~~

4/4

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VOSKRESENSKIY, V.A.; SHAKIRZYANOVA, S.S.; BYL'YEV, V.A.

Certain regularities in the plasticization of polyvinyl chloride  
by tetrahydrophthalate oxides. *Izv.vys.ucheb.zav.;khim.i khim.-*  
*tekh.* 5 no.2:322-325 '62. (MIRA 15:8)

1. Kazanskiy inzhenerno-stroitel'nyy institut, kafedra khimii.  
(Vinyl compound polymers) (Plasticization)

S/153/62/005/003/002/004  
E112/E435

AUTHORS: Byl'yev, V.A., Voskresenskiy, V.A.  
TITLE: Plasticizing of polyvinylchloride with synthetic rubber CKH-40 (SKN-40)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i khimicheskaya tekhnologiya, v.5, no.3, 1962, 474-476

TEXT: Preliminary experiments have shown that if compounded at 150 to 155°C, polyvinylchloride was compatible and miscible with any given concentration of synthetic rubber SKN. Best results were obtained with SKN-40. The effect of the polyvinylchloride: SKN-40 ratio on the tensile strength in kg/cm<sup>2</sup> and relative elongation in % was studied; the results are given in Table 1. The optimum ratio was 100:100 (parts by weight), which also gave best homogeneity of the composition and a minimum degree of swelling in the dichlorethane vapours. To further improve the properties, the effect of the addition of sulphur (0.1 to 5% on the weight of SKN-40) was studied; maximum improvement was achieved on the addition of 1% S. Properties with and without sulphur are

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Plasticizing of polyvinylchloride ...

S/153/62/005/003/002/004  
E112/E435

compared and tabulated. The dibutyl phthalate plasticized composition was less stable (due to extraction of dibutyl phthalate by solvent) in benzene than material plasticized with SKN-40 and, consequently, had a lower elasticity and strength. As regards the stability in water (in terms of swelling) compositions with SKN-40 as plasticizer, particularly in presence of sulphur, were considerably superior to compositions with dibutyl phthalate as plasticizer. There are 1 figure and 3 tables. ✓

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut  
Kafedra khimii i fiziki  
(Kazan' Construction Engineering Institute  
Department of Chemistry)

SUBMITTED: February 20, 1961

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Plasticizing of polyvinylchloride ...

S/153/62/005/003/002/004  
E112/E435

Table 1.

Ratio Πφ-4:CKH-40 (PF-4:SKN-40)	Tensile strength, kg/cm <sup>2</sup>	Elongation, %	Hardness kg/cm <sup>2</sup>
100 : 110	137.5	225	17.4
100 : 100	207.5	330	21.23
100 : 80	281.5	210	49.0
100 : 70	292.8	200	68.69
100 : 60	300.5	180	79.62
100 : 50	307.0	125	90.99

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S/153/62/005/006/015/015  
E071/E333

AUTHORS: Rozhdestvenskaya, L.A. and Voskresenskiy, V.A.  
TITLE: Experience in electrochemical coating of plastics  
with metals  
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i  
khimicheskaya tekhnologiya, v. 5, no. 6, 1962,  
1001 - 1002

TEXT: The object of the investigation was the development  
of a chemical method of coating various plastics with a thin metal-  
lic layer in order to produce a thin conductive base film from a  
metal of high availability which can be subsequently used for  
electrodeposition of copper, nickel and other metals. Chemical  
deposition of silver was obtained by the following method. The  
surface of a plastic specimen is roughened with an abrasive,  
degreased with petrol, alcohol and washed with hot and cold water.  
The specimen is immersed into formalin at room temperature for  
10 - 15 minutes, whereupon the reducing agent diffuses to some  
depth into the plastic specimen. The specimen is then transferred  
into a silvering solution for 20 - 30 minutes. The silvering  
Card 1/2

Experience in ....

S/153/62/005/006/015/015  
E071/E333

solution is made up as follows: potassium hydroxide is added to a 0.5% solution of silver nitrate until the turbid  $\text{Ag}_2\text{O}$  is formed, which is then dissolved with a small quantity of  $\text{NH}_4\text{OH}$ . To this solution a 40% formalin is added in a proportion of 0.2 ml. per 100 ml. silver-nitrate solution. For the chemical deposition of copper, specimens treated with formalin as above are transferred into a solution consisting of (g/l.)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  - 20; glycerin - 35;  $\text{NaOH}$  - 26; a 25% solution of  $\text{NaOH}$  - 10; a 40% solution of formalin 5 - 8. The specimens are retained in this solution for 30 - 40 minutes at room temperature.

ASSOCIATION: Kafedra khimii, Kazanskiy inzhenerno-stroitel'nyy institut  
(Department of Chemistry, Kazan' Construction Engineering Institute)

SUBMITTED: June 19, 1961

Card 2/2

VOSKRESENSKIY, V.A.; SHAKIRZYANOVA, S.S.

Characteristics of the action of small and largest permissible  
quantities of monomeric plasticizers on poly (vinyl chloride).  
Zhur.prikl.khim. 35 no.5:1145-1147 My :62. (MIRA 15:5)  
(Vinyl compound polymers)  
(Plasticizers)

h1112

S/069/62/024/005/002/010  
B107/B186

157050

AUTHORS: Voskresenskiy, V. A., Shakirzyanova, S. S.

TITLE: Changes in the mechanical strength of plasticized polyvinyl chloride in low-molecular liquids.

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 5, 1962, 533 - 536.

TEXT: A material composed of 100 parts by weight of polyvinyl chloride (resin №-4 (PF-4)) with 64 parts of dibutyl phthalate and 3 of calcium stearate was investigated. Samples of the plasticized materials were placed in desiccators which contained the following liquids:  $\text{HNO}_3$  ( $d = 1.43 \text{ g/cm}^3$ ),  $2\text{N H}_2\text{SO}_4$ ,  $2\text{N CH}_3\text{COOH}$ ,  $30\% \text{H}_2\text{O}_2$ , benzene, gasoline, distilled water. The desiccators were kept at room temperature and every 5 days samples were taken from them to determine the following values: tensile strength  $\sigma$  in  $\text{kp/cm}^2$ , relative elongation  $\Delta l$  in %, hardness  $H_B$  in  $\text{kp/cm}^2$ , change in weight %. The results are collected in the illustration. It will be seen from this that change of these values with

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S/069/62/024/005/002/010  
B107/B186

Changes in the mechanical strength...

time is not monotonic, being dependent on the interaction of the various effects due to swelling, extraction of the plasticizer and chemical nature of the low-molecular liquids. The results indicate that polyvinyl chloride of the stated composition should not be used in a medium containing concentrated nitric acid. There is 1 figure. f

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut, Kafedra khimii (Kazan' Construction Engineering Institute, Department of Chemistry). Kazanskiy institut organicheskoy khimii, Laboratoriya polimerov (Kazan' Institute for Organic Chemistry, Polymer Laboratory)

SUBMITTED: August 20, 1961

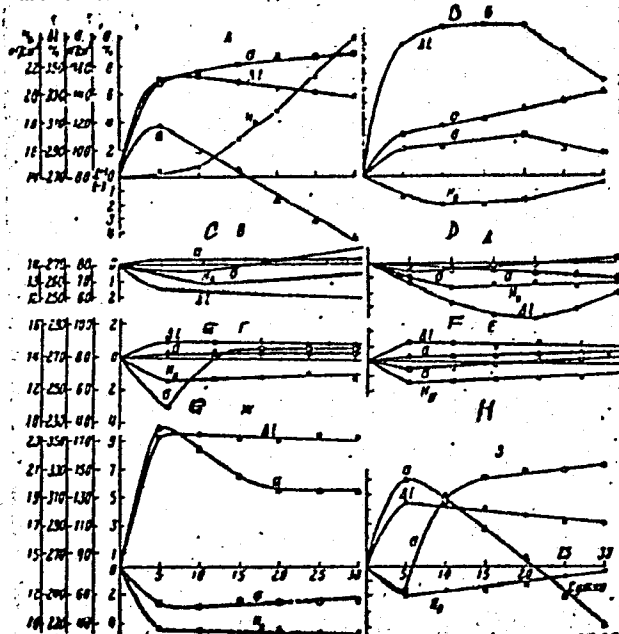
Fig. Changes in the weight and properties of polyvinyl chloride on treatment with  $\text{HNO}_3$  (A),  $\text{CH}_3\text{COOH}$  (B),  $\text{H}_2\text{SO}_4$  (C),  $\text{H}_2\text{O}_2$  (D),  $\text{NaOH}$  (E),  $\text{H}_2\text{O}$  (F), benzene (G), gasoline (H).

Legend: a - change in weight of the sample;  $\delta$  - tensile strength;  $\Delta l$  - relative elongation;  $H_B$  - hardness.

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Changes in the mechanical strength...

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B107/B186



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321.00  
S/080/62/035/001/013/013  
D204/D304

15.8220 2209

AUTHORS: Voskresenskiy, V. A. and Shakurzyanova, S. S.

TITLE: Influence of the chemical properties and structure of plasticizers on their plasticizing action

PERIODICAL: Zhurnal prikladnoy khimii, v.35, no.1, 1962, 217-221

TEXT: A study of the effects of the chemical nature, structure, polarity, molecular size and molecular shape of solid, monomeric compounds, when added as plasticizers to polyvinyl chloride (PVC). The additives were rolled into the polymer at 125 - 160°C and the compositions which were then compressed into 2 mm films at 140 - 145°C, were evaluated by physicommechanical tests. The ratio of PVC to the plasticizer was kept at 100 : 36 parts by weight and 3 parts of Ca stearate were added in each case. In the first series of experiments the monomers consisted of naphthalene, *o*-hydroxyquinolin,  $\alpha$ - and  $\beta$ -nphthols, 1,7 dihydroxynaphthalene and  $\beta$ -nitroso- $\alpha$ -naphthol. It was found that all the above combined with PVC to form macrohomogeneous, semi-transparent sheets. True plasticizing action was only observed in the cases of naphthalene, *o*-hydroxyquinoline

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32400

S/080/62/035/001/013/013

D204/D304

Influence of the chemical ...

and  $\alpha$ -naphthol, the remaining compounds behaving merely as fillers. In the second series of experiments diphenyl, diphenyl ether, diphenylamine, azobenzene, stilbene, Michler's ketone, diphenyl carbazide and carbazone, *o*-tolidine, phenolphthalein and *p*-terphenyl were tested. All monomers combined easily with PVC but only diphenyl, azobenzene, diphenylamine and diphenyl ether behaved as plasticizers, improving the flexibility and elasticity of the compositions. *o*-Tolidine increased the tensile strength to 913.0 kg/cm<sup>2</sup>. Anthracene and anthraquinone which were tried in the third and last series did not mix well with PVC and behaved largely as fillers although some plasticizing action was perceptible. It was concluded that for a given polymer the plasticizing effects depend largely on the chemical composition and structure and on the size and shape of the plasticizer molecule, while polarity plays a secondary role and is not always significant. There are 3 tables and 2 Soviet-bloc references-

SUBMITTED: November 16, 1960

Card 2/2

VOSKRESENSKIY, V.A.; ORLOVA, Ye.M.

Modern concepts of the plasticization of polymers. Usp.khim. 33  
no.3:320-333 Mr '64. (MIRA 17:4)

1. Kafedra khimii Kazanskogo inzhenerno-stroitel'nogo instituta.

35701

S/080/62/035/003/024/024  
D204/D302

15.2050

AUTHOR: Voskresenskiy, V. A.

TITLE: The action of liquids of low molecular weight on certain polymers

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 3, 1962, 696-698

TEXT: The effects were studied of 5-70 (B-70) benzine and distilled water on the physico-mechanical properties of polyvinyl chloride (PVC) sheets plasticized with dibutyl phthalate, chlorophthalate and nitrophthalate. Relative elongation ( $\Delta l, \%$ ) and the tensile strength ( $\sigma, \text{kg/cm}^2$ ) of specimens soaked for 1 - 30 days were measured. In benzine,  $\Delta l$  passed through a maximum after 3 - 5 days and then decreased slowly, whilst  $\sigma$  first decreased (5 - 10 days) and rose gradually thereafter. Dibutyl nitrophthalate induced higher elasticity and strength into the composition, presumably owing to the superior compatibility of this compound with PVC. In water, the changes were less pronounced, but  $\sigma$  decreased and  $\Delta l$  tended to increase /- Abstracter's note: This is based on tabulated

Card 1/2

The action of liquids ...

S/030/62/035/003/024/024  
D204/D302

data; the reverse is stated in the text 7. The above tests were repeated after ageing the specimens for 1 year. The aged specimens were more susceptible to the action of benzine and water, especially the former. The results are presented in graphical or tabular form and are briefly discussed. There are 2 figures, 2 tables and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: J. Auerboch, J. Pol. Sci., 28, 129, (1958); S. Prager, E. Bagley and F. A. Long, J. Am. Chem. Soc., 75, 1255, (1953); P. E. Rouse, J. Am. Chem. Soc., 69, 1068, (1947). ✓

SUBMITTED: March 28, 1961

Card 2/2

30165  
S/080/62/035/004/020/022  
D214/D301

15.8050

AUTHORS: Byl'yev, V. A. and Voskresenskiy, V. A.

TITLE: The action of benzene and water on polyvinyl chloride plasticized by polymeric plasticizers

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 4, 1962, 914-915

TEXT: Recently polymeric plasticizers have been increasingly utilized in plasticizing polyvinyl chloride (PVC). It is the purpose of the present work to study the stability towards water and benzene of PVC thus plasticized. Several types of nitrile rubber were used as plasticizers. The compatibility of these plasticizers with PVC (resin ПФ-4 (PF-4)) increased with the number of nitrile groups, resulting in better physico-mechanical properties of the plastic. The highest stability towards water and benzene was obtained with plasticizer СКН-40 (SKN-40). Mixtures with different ratios of SKN-40 to resin PF-4 were studied. As the SKN-40 content increased the tensile strength of the sample decreased, the elasticity increased and the stability towards water and benzene was lowered. A 1:1

Card 1/2



The action of benzene ...

S/080/62/035/004/020/022  
D214/D301

mixture gave samples with good physico-chemical properties with a sufficient stability towards water and benzene. There are 2 figures, 2 tables and 4 Soviet-bloc references.

SUBMITTED: January 21, 1961

X

Card 2/2

S/080/62/035/005/013/015  
D244/D307

AUTHORS: Voskresenskiy, V. A. and Shakizyanova, S. S.  
TITLE: On the peculiarities of action of small and the maximum quantities of monomeric plasticizers on polyvinyl chloride  
PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 5, 1962, 1145-1147

TEXT: The authors investigated physico-mechanical properties of polyvinyl chloride compounded with the minimum and maximum amounts of monomeric plasticizers to confirm data reported previously by O. Fuchs and H. H. Frey. Dibutyl phthalate and *o*-tolidine were used as the plasticizers. For 100 parts by weight of polyvinyl chloride *PP*-4 (PF-4), 0.5 to 190 parts of dibutyl phthalate and 0.5 to 36 parts of *o*-tolidine were used. For the polymer plasticized with dibutyl phthalate there was no increase in brittleness of the compositions similar to that described by Fuchs et al. for other plasticizers. *o*-tolidine behaves abnormally in comparison

Card 1/2

On the peculiarities ...

S/080/62/035/005/013/015  
D244/D307

with dibutyl phthalate. Increase in the concentration of o-tolidine gave a continuous increase in the breaking strength of the polymer samples, from 550 to 900 - 915 kg/cm<sup>2</sup>, the relative initial extension increasing somewhat and then falling with further increases of o-tolidine. It was shown that o-tolidine a) is an effective plasticizer at 130°C, giving at this temperature elastic and strong films; b) on cooling to room temperature strengthens the polymeric structure by forming hydrogen bonds; c) plays a role of an effective stabilizer for polyvinyl chloride. There are 2 figures. ✓

SUBMITTED: February 19, 1961

Card 2/2

S/080/62/035/008/008/009  
D267/D308

AUTHORS: Voskresenskiy, V.A., Orlova, Ye.M., Bikchentayeva, S.  
Kh., and Komissarenko, A.B.

TITLE: The plasticizing of polytetrafluoroethylene

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 8, 1962,  
1862 - 1863.

TEXT: The authors studied the possibilities of a physical plasticization of polytetrafluoroethylene by combining it with high-pressure polyethylene. The blending was carried out on rollers with the friction ratio 1 : 1.25 at 150 - 155°C, to complete homogeneity. It was found that the incorporation of very small proportions of polyethylene increased the fluidity of the compositions, the optimum results being obtained when blends with 30 - 35 % of polyethylene were used. There is 1 table.

SUBMITTED: June 12, 1961

Card 1/1

MAKLAPOV, A.I.; VOSKRESENSKIY, V.A.; KHIYENKINA, B.D.; YEGOROVA,  
L.Ya.

Nuclear magnetic resonance study of filled plasticized p'lyvinyl  
chloride. Vysokom.soed. 6 no. 5:923-924. My '64. (MIFA 17:6)

1. Kazanskiy gosudarstvennyy universitet i Kazanskiy inzhenerno-  
stroitel'nyy institut.

VOSKRESENSKIY, V.A.; FRIDLAND, S.V.; ORIOVA, Ye.M.; BYI'YEV, V.A.

Some means of increasing the stability of plasticization systems.  
Izv.vys.ucheb.zav.; khim. i khim. tekhn. 7 no. 1:132-136 '64.

(MIRA 17:5)

1. Kazanskiy inzhenerno-stroitel'nyy institut, kafedra khimii.

ACCESSION NR: AP4037289

8/0190/64/006/005/0923/0924

AUTHORS: Maklakov, A. I.; Voskresenskiy, V. A.; Khiyenkina, B. D.; Yegorova, L. Ya.

TITLE: A nuclear resonance investigation of filled plasticized polyvinylchloride

SOURCE: Vy\*sokomolekulyarny\*ye soyedineniya, v. 6, no. 5, 1964, 923-924

TOPIC TAGS: polyvinylchloride, nuclear magnetic resonance, filler, plasticizer, stabilizer, silica gel, aluminum, calcium stearate, dibutylphthalate, dioctylphthalate, spin spin relaxation, polyvinylchloride PF 4

ABSTRACT: The process of polymer filling was studied by the method of nuclear magnetic resonance. Samples were 2 mm thick and consisted of (parts by weight): polyvinylchloride (PVC) brand PF-4 -- 100; plasticizer -- 64; stabilizer (calcium stearate) -- 3; filler -- 0-70. Silica gel and aluminum powder were used as fillers; dibutylphthalate (DBP) and dioctylphthalate (DOP) were used as plasticizers. The oscillographic investigation and the study of spin-spin relaxation period ( $T_2$ ) indicated a strong molecular interaction between the polymer and the plasticizer. It was noted that DBP exerted a greater influence than DOP on the mobility of the PVC molecules. The introduction of DBP gradually diminished  $T_2$  with silica gel

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ACCESSION NR: AP4037289

being more active than aluminum in this process.  $T_2$  for PVC + DOP + silica gel proved to be almost independent of the filler content; aluminum diminished the molecule mobility in this system to a lesser extent than in the system containing DBP. These experiments showed that  $T_2$  is related to the amount and type of plasticizers and stabilizers. Orig. art. has: 2 graphs.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University);  
Kazanskiy inzhenerno-stroitel'nyy institut (Kazan' Engineering and Structural  
Institute)

SUBMITTED: 01Jul63

DATE ACQ: 09Jun64

ENCL: 00

SUB CODE: MT

NO REF SOV: 004

OTHER: 003

Card 2/2



ACCESSION NR: AP4010487

S/0080/64/037/001/0145/0149

AUTHOR: Voskresenskiy, V. A.; Atamanova, V. V.; By\*1'yav, V. A.

TITLE: The effect of low molecular liquids on certain polymeric combined systems

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 1, 1964, 145-149

TOPIC TAGS: low molecular liquid, polymeric system, polyvinylchloride, plasticizer, monomeric plasticizer, combined polymeric system, physico-mechanical property, butyl rubber, polymeric plasticizer, polyethylene, nitrile rubber

ABSTRACT: The effect of various low molecular liquids, such as benzene, distilled water and acetic acid, on the weight and other physico-mechanical properties of polyvinylchloride, plasticized with SKN-40 nitrile rubber, and of high pressure polyethylene, plasticized with butyl rubber, were investigated. It was found that the low molecular liquids caused the plasticized polyvinylchloride

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ACCESSION NR: AP4010487

to swell, with this swelling eventually becoming stabilized. It was also observed that the effects of these low molecular liquids on the variation of physico-mechanical properties follow a definite pattern. This change of properties in the plasticized polyvinyl-chloride composition revealed that the molecules of the low molecular liquids diffuse in the polymeric system and produce a plasticizing effect. The experiments indicated that the plasticized polyvinyl chloride has low resistance to nitric acid (Sp gr 1.44), benzene, and acetic acid, while the plasticized polyethylene has low resistance to concentrated nitric acid, benzene, and perhydrol. It was concluded that the effects of low molecular liquids on the studied polymeric systems depend on chemical nature of the polymers and plasticizers used, the type of low molecular liquids used, and the duration of their action. The nature of the swelling of system plasticized with polymers differs from that of systems plasticized with the same amount of monomers. Orig. art. has: 6 figures.

ASSOCIATION: none

Card

2/3

ACCESSION NR: AP4037235

8/0153/64/007/001/0132/0136

AUTHOR: Voskresenskiy, V. A.; Fridland, S. V.; Orlova, Ye. M.; By\*1'yev, V. A.

TITLE: Several means of increasing the stability of plasticized systems.

SOURCE: Ivuz. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 1, 1964, 132-136

TOPIC TAGS: plasticized system, plasticized polyvinylchloride, stability, thermal oxidation, stabilization, natural aging, artificial aging, physical mechanical index, high frequency heating, dibutylphthalate, dibutylsebacate, dibutylnitrophthalate, dibutylchlorophthalate, weight loss, swelling, tensile strength, elongation, hardness, plasticizer distribution, compatibility

ABSTRACT: The processes of natural and artificial aging of polyvinyl compositions plasticized with monomeric plasticizers of different chemical structure, and the effect of preceeding high frequency heating on the aging process were studied by noting the nature of the change in the physico-mechanical indexes of these compositions. Compositions comprising PF-4 polyvinylchloride resin, 100 parts by weight, plasticizer 64, and calcium stearate 3, were rolled into 2 mm films. Accelerated aging was at 80C under 5 atm. oxygen for 100 hours. In a dibutylphthalate

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ACCESSION NR: AP4037235

plasticized PVC under thermal oxidation, the weight decreased somewhat with time due to the evaporation of plasticizer, the degree of swelling in benzene increased, tensile strength increased and elongation and hardness decreased. Similar results were obtained with dibutylsebacate. After high frequency heating (19.5 megacycles, anode current 0.34-0.40 amps, grid current 200-250 amps, for 2 minutes at a distance of 5-7 mm from sample surface) the plasticized PVC was more stable to thermal oxidative aging (tensile strength increased more and elongation decreased less) due to more uniform distribution of the plasticizer in the polymer. A comparison was made of dibutylphthalate, dibutylnitrophthalate and dibutylchlorophthalate on PVC samples aged for 1 year at -5 to 24C, and 55-75% relative humidity. Dibutylnitrophthalate increases the indexes most (almost doubling the tensile strength and elongation) in comparison to the other two compounds. The changes with time of the properties of the nitro- and chloro-containing plasticizers are much slower than with dibutylphthalate itself. This is attributed especially to the compatibility of the nitro group with the polymer. Orig. art. has: 4 figures.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut Kafedra khimii (Kazan Construction Engineering Institute, Department of Chemistry)

Card

2/3

ACCESSION NR: AP4037235

SUBMITTED: 20Nov62

SUB CODE: MT

NO REF SOV: 006

ENCL: 00

OTHER: 001

Card 3/3

ACCESSION NR: AP4041683

S/0153/64/007/002/0297/0300

AUTHOR: Voskresenskiy, V. A.; Maklakov, A. I.; Orlova, Ye. M.;  
Kireyeva, G. V.

TITLE: The nature of modifications in plasticized poly(vinyl chloride) induced by high-frequency currents

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 7; no. 2, 1964, 297-300

TOPIC TAGS: poly(vinyl chloride), pf 4 resin, plasticized poly(vinyl chloride), phthalic acid ester, sebacic acid ester, phosphoric acid ester, high frequency preheating, physicommechanical property

ABSTRACT: The previously established high-frequency-induced improvements in physicommechanical characteristics of plasticized poly(vinyl chloride) (PF-4 resin) were studied in detail in order to explain the mechanism of the high-frequency action. This study

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ACCESSION NR: AP4041683

was prompted by the successful application of high-frequency currents in curing polymer materials, polymerizing glass-reinforced plastics, et cetera. Mixtures of PF-4 resin with a polar plasticizer and calcium stearate stabilizer were subjected to high-frequency preheating under optimum conditions before calendering to form thin films. Viscosimetric and thermomechanical measurements and differential thermal analysis showed nearly identical characteristics for high-frequency treated and untreated samples of the same initial composition, regardless of the nature of the plasticizer (phthalic, sebacic, or phosphoric acid esters). It was concluded that high-frequency currents do not induce any fundamental modification of the chemical structure or kinetic properties in macromolecules of the polymer. The previously observed improvements in physicomechanical characteristics, as well as resistance to aging and to low-molecular-weight liquids, are attributed to accelerated diffusion of the plasticizers into the bulk of the polymer and gelation. Such a degree of gelation is reached that the highest possible number of polymer-plasticizer-polymer bonds are formed. Orig. art. has: 3 figures.

Card 2/3

ACCESSION NR: AP4041683

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut (Kazan  
Construction Engineering Institute); Gosudarstvennyy universitet  
im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 21Jun63

ATD PRESS: 3052

ENCL: 00

SUB CODE: MT, OC

NO REF SOV: 009

OTHER: 003

Card 3/3



L 39077-66 ENT(m)/EMP(j)/T IJP(c) WW/JWD/RM

ACC NR: AP6021972

(A)

SOURCE CODE: UR/0153/66/009/002/0303/0305

AUTHOR: Byl'yev, V. A.; Voskresenskiy, V. A.

36.  
e.

ORG: Chemistry Department, Kazan Engineering and Construction Institute (Kafedra khimii, Kazanskiy inzhenerno-stroitel'nyy institut)

TITLE: Effect of organic and inorganic admixtures on the thermomechanical properties of polyvinyl chloride

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 2, 1966, 303-305

TOPIC TAGS: polyvinyl chloride, plasticizer, iron oxide, lead oxide, zinc oxide, magnesium oxide, polymer cross linking

ABSTRACT: The effect of plasticizing organic admixtures of diverse structure and polarity and the effect of metal oxide fillers on the thermomechanical properties of polyvinyl chloride (PVC) were studied. The modifying admixtures were (1) compounds with condensed benzene rings ( $\alpha$ -naphthol,  $\beta$ -naphthol,  $\alpha$ -nitroso- $\beta$ -naphthol, ortho-hydroxyquinoline, 1,7-dihydroxynaphthalene, 2,7-dihydroxynaphthalene, 2,6-dihydroxynaphthalene) and also para-terphenyl, biphenyl, ortho-tolidine, and (2) the metal oxides PbO, PbO<sub>2</sub>, ZnO, MgO, and Fe<sub>2</sub>O<sub>3</sub>. The proportion of PVC, plasticizers, and calcium stearate was (in parts by weight) 100:36:1.5, and that of PVC, metal oxides, and calcium stearate, 100:20:1.5. It was found that the plasticizing effect depends not only the polarity, but also on the structure of the organic substance, number,

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UDC: 539.199:541.68

I. 35277-66

ACC NR: AP6021972

type and position of the functional groups, and size of the plasticizer molecules. The introduction of PbO and PbO<sub>2</sub> was found to cause substantial cross-linking in PVC. MgO and ZnO intensify the dehydrochlorination of PVC, and the space network thus formed is thermally stable up to the temperature of complete decomposition. Iron oxides also produce rigid cross-linked systems in which flow processes are lacking. However, no appreciable shift in the glass transition temperature is caused by the metal oxides. Orig. art. has: 2 figures.

SUB CODE: 07,11/ SUBM DATE: 24Jul64/ ORIG REF: 006/ OTH REF: 001

CAD

PC

Card

2/2MLP

L 39078-66 EWT(m)/ENP(j) LJP(s) RM/BH  
 ACC NR: AP6021973 (A) SOURCE CODE: UR/0153/66/009/002/0310/0313

AUTHOR: Lopatkin, Ya. M.; Voskresenskiy, V. A.

ORG: Department of Polymer Chemistry and Technology, Kazan Engineering and Construction Institute (Kafedra khimii i tekhnologii polimerov, Kazanskiy inzhenerno-stroitel'nyy institut)

TITLE: Thermographic study of polyvinyl chloride - polar plasticizer systems

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 2, 1966, 310-313

TOPIC TAGS: polyvinyl chloride, plasticizer, thermographic analysis

ABSTRACT: The differential thermal method was used to study the plasticization of polyvinyl chloride (PVC) with polar plasticizing admixtures, and the influence of the latter on the nature of secondary supermolecular structures was determined. The systems consisted of combinations of PVC with dinonyl phthalate, triphenyl phosphate, ortho-tolidine, 4-aminobiphenyl, and 4,4'-dinitrobiphenyl. An FPK-59 photorecording pyrometer was employed. The observed endothermic and exothermic processes, due to the presence of the plasticizers, are interpreted from the standpoint of present-day concepts of the structure of polymers and their plasticization. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: 14May64/ ORIG REF: 008/ OTH REF: 001

Card 1/1 07/ UDC: 539.1991541.66

L 20355-66 EWT(m)/EMP(1)/I/ETC(m)-6 WA/RM  
ACC NR: AP5012072 SOURCE CODE: UR/0069/65/027/001/0019/0023

AUTHOR: Voskresenskiy, V. A.—Voskresenskii, V. A.; Shakirzyanova, S. S.

ORG: Kazan Engineering and Construction Institute (Kazanskiy inzhenerno-stroitel'nyy institut)

TITLE: Some characteristic changes in the properties of concentrated polymer solutions

SOURCE: Kolloidnyy zhurnal, v. 27, no. 1, 1965, 19-23

TOPIC TAGS: polymer, polyvinyl chloride, plasticizer, thermomechanical property, solid mechanical property, hydrogen bonding

ABSTRACT: Experimental data are presented on the plasticization of polyvinyl chloride by organic substances of various structures and molecular sizes and shapes, viz: naphthols; biphenyl, pentachlorobiphenyl, o-tolidine; phthalic acid derivatives; cycloparaffin derivatives; oxides of tetrahydrophthalates with side radicals of various lengths; and additives having different sizes of molecules (biphenyl, p-torphenyl, phenolphthalein, naphthalene, anthracene, anthraquinone). The plasticization effect, estimated from changes in physicomechanical properties, thermomechanical properties, and cold resistance, was found to be substantially dependent on the chemical structure, size, and shape of the plasticizers. An important part is played by polar and hydrogen bonds, which often cause an increase in the strength of the polymer. Orig. art. has: 3 figures and 5 tables. [JPRS]  
SUB CODE: 07, 11, 20 / SUBM DATE: 07May63 / ORIG REF: 014 / OTH REF: 001  
Card 1/1 vmb UDC: 539.199: 541.18

ABRAMOSA, Ye.I.; ANDREYEV, V.I.; VOSKRESENSKIY, V.A.

Some regularities of the changes in the dielectric indices of plasticized polyvinyl chloride. Izv.vys.ucheb.zav.; khim.i khim.takh. 8 no.4:655-658 '65.

(MIRA 18:11)

1. Kafedra khimii i fiziki Kazanskogo inzhenerno-stroitel'nogo instituta.

TYAGUNOV, V.A.; VOSKRESENSKIY, V.A.

Investigating the screwdown mechanism of a slabbing mill  
working "to the limit." Izv. vys. ucheb. zav.; Chern. met.  
8 no.10:158-161 '65. (MIRA 18:9)

1. Ural'skiy politekhnicheskiy Institut.

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001861030004-8**

**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001861030004-8"**

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**CIA-RDP86-00513R001861030004-8**

**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001861030004-8"**



VOSKRESENSKIY, V.A.; SHAKIRZYANOVA, S.S.

Some characteristic property changes in concentrated polymer solutions. Koll. zhur. 27 no.1:19-23 Ja-F '65.

(MIRA 18:3)

1. Kazanskiy inzhenerno-stroitel'nyy institut.

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001861030004-8**

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**CIA-RDP86-00513R001861030004-8**

**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001861030004-8"**

VOSKRESENSKIY, V.A.; MAKLAKOV, A.I.; ORLOVA, Ye.M.; KIREYEVA, G.V.

Characteristics of changes of plasticized polyvinyl chloride  
in the high-frequency current field. Izv.vys.ucheb.zav.; khim.  
i khim.tekh. 7 no.2:297-300 '64. (MIRA 18:4)

1. Kazanskiy inzhenerno-stroitel'nyy institut i Kazanskiy  
gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.